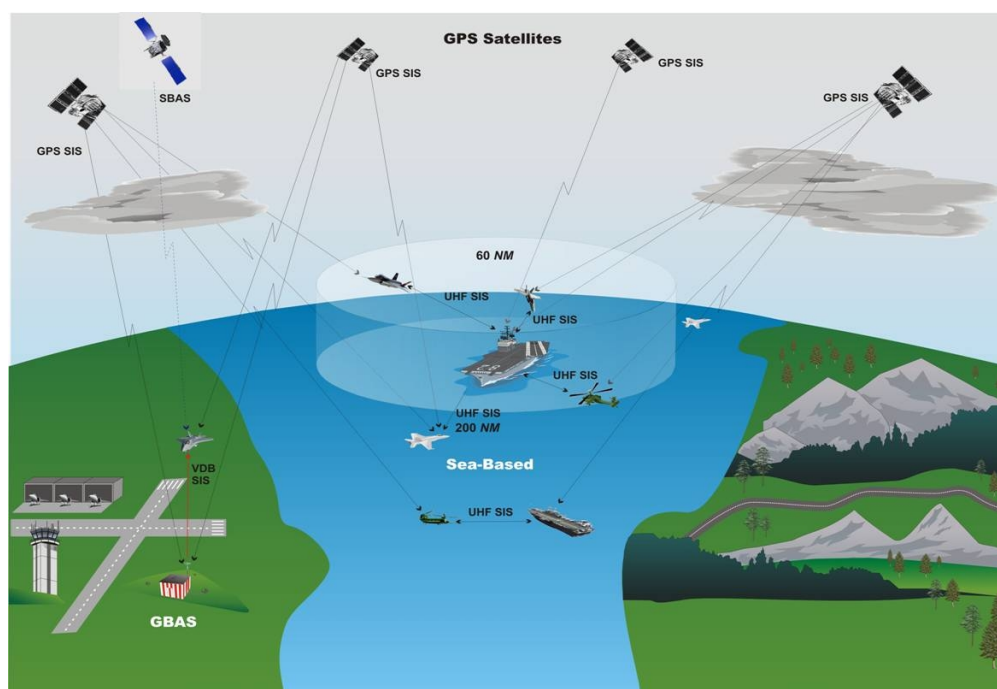




## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-238



## Joint Precision Approach and Landing System Increment 1A (JPALS Inc 1A)

As of FY 2015 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE <b>DEC 2013</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2013 to 00-00-2013</b>	
4. TITLE AND SUBTITLE <b>Joint Precision Approach and Landing System Increment 1A (JPALS Inc 1A)</b>				5a. CONTRACT NUMBER	
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Program Executive Officer (T) (PMA213),,46579 Expedition Drive,Expedition IV, 3rd Floor, Suite 301,,Lexington Park,,MD,20653</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
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14. ABSTRACT					
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16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>39</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

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## Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
BA - Budget Authority/Budget Activity  
BY - Base Year  
DAMIR - Defense Acquisition Management Information Retrieval  
Dev Est - Development Estimate  
DoD - Department of Defense  
DSN - Defense Switched Network  
Econ - Economic  
Eng - Engineering  
Est - Estimating  
FMS - Foreign Military Sales  
FY - Fiscal Year  
IOC - Initial Operational Capability  
\$K - Thousands of Dollars  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MILCON - Military Construction  
N/A - Not Applicable  
O&S - Operating and Support  
Oth - Other  
PAUC - Program Acquisition Unit Cost  
PB - President's Budget  
PE - Program Element  
Proc - Procurement  
Prod Est - Production Estimate  
QR - Quantity Related  
Qty - Quantity  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
Sch - Schedule  
Spt - Support  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting

## Program Information

**Program Name**

Joint Precision Approach and Landing System Increment 1A (JPALS Inc 1A)

**DoD Component**

Navy

## Responsible Office

**Responsible Office**

CAPT D. D. Lack  
Program Executive Officer (T) (PMA213)  
46579 Expedition Drive  
Expedition IV, 3rd Floor, Suite 301  
Lexington Park, MD 20653  
[Darrell.Lack@navy.mil](mailto:Darrell.Lack@navy.mil)

**Phone** 301-737-2091  
**Fax** 301-737-2100  
**DSN Phone** --  
**DSN Fax** --

**Date Assigned** July 25, 2011

## References

**SAR Baseline (Development Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 19, 2008

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 19, 2008

## Mission and Description

The Joint Precision Approach and Landing System (JPALS) is a joint interest program with the Navy as the DoD lead component. JPALS is a Global Positioning System (GPS)-based precision approach and landing system that will replace several aging and obsolete aircraft landing systems with a family of systems that is more affordable, will function in more operational environments, and support all DoD Land and Sea Based applications. The National Defense Strategy of the United States of America calls for highly mobile forces that can rapidly respond to crises worldwide. Success in meeting this challenge requires the ability to land aviation assets virtually anywhere, at any time. JPALS will provide this capability by being rapidly deployable, survivable, and interoperable among the U.S. Services and with U.S. allies, as well as with civil aircraft and landing facilities. JPALS will eventually support unmanned and highly automated aircraft and will be able to operate during restricted Emission Control conditions.

The approved JPALS Acquisition Strategy defines seven acquisition increments, based on technology maturity and Service needs. Inc 1, Sea Based JPALS, is separated into two phases: Inc 1A ship based systems and Inc 1B aircraft integration.

The JPALS Inc 1 Capability Development Document (CDD) approved by a Joint Requirements Oversight Council (JROC) Memorandum on March 16, 2007, directs the U.S. Navy to be the lead Service for JPALS.

Inc 2 encompasses all Fixed and Mobile Systems that support 200 feet Decision Height (DH) and ½ Statute Mile (SM) visibility for auto-land of properly equipped aircraft. The JPALS Inc 2 CDD was signed on January 19, 2010.

Inc 3 encompasses Fixed and Mobile Systems to support Federal Aviation Administration certification to 100 feet DH and ¼ SM visibility and a Sea Based system for auto-land of properly equipped aircraft.

Inc 4 will provide a Sea Based JPALS capability that supports 100 feet DH and ¼ Nautical Mile visibility, including auto-land and Unmanned Aerial Vehicle support.

Inc 5 will encompass Land Based man-pack systems certified to minimums based on Service needs.

Inc 6 will support Special Operations Forces, mobility missions, and subsequent combat operations with an autonomous approach and landing capability.

Inc 7 is an upgrade to the Sea Based back-up capability, involving reliability, maintainability, and life-cycle improvements to the AN/SPN-41 Instrument Carrier Landing System.

Currently, only Inc 1 and 2 have been approved by the JROC.

## Executive Summary

The program initiated at Milestone B and reporting in this SAR reflects JPALS Inc 1A.

JPALS Inc 1A demonstrated auto-land capability in the first Quarter FY 2014. This compressed three-month at-sea effort resulted in over 70 coupled approaches using F/A-18 aircraft flying against a JPALS Inc 1A ship system installed on the USS Theodore Roosevelt (CVN 71). This capability demonstration was one of the culminating phases of the current JPALS Inc 1A ship system Engineering and Manufacturing Development contract and has accrued significant risk reduction benefits. This effort also provided valuable data that demonstrated the potential to provide an objective, certifiable auto-land capability. Additionally, the test program will complete and all test data analysis efforts will close out in early third Quarter FY 2014.

Due to DoD budget constraints and affordability concerns, the Navy performed an internal analysis of the overall Department of Navy Precision Approach and Landing Capability (PALC) requirement. The result of the internal analysis was a PALC roadmap and a Navy proposal to accelerate the incorporation of capabilities planned for future increments into the JPALS Inc 1A program. Under this concept, the JPALS Inc 1A ship system would continue to be developed and procured for use on United States Navy aircraft carriers (CVN-type) and amphibious assault ships (LH-type) in support of the F-35B/C and Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) programs. JPALS would not be integrated into legacy CVN aircraft (JPALS Inc 1B aircraft integration), nor would JPALS be developed and procured for Navy and Marine Corps fixed based air stations or expeditionary airfields (JPALS Inc 2 land-based capability). JPALS would, however, support auto-land for manned and unmanned aircraft (planned future JPALS Inc 3 and Inc 4 capabilities). Separate from JPALS, civil Instrument Landing System capability will be procured and deployed at Navy and Marine Corps fixed based air stations and integrated into legacy aircraft to address joint and civil interoperability gaps. Further, legacy shipboard landing systems will be recapitalized and/or sustained.

These proposed changes to JPALS Inc 1A extend the development program in order to conduct risk reduction activities for manned and unmanned auto-land capability improvements in support of F-35B/C and UCLASS test and deployment schedules, thereby deferring the production decision (Milestone C) by approximately three years to FY 2017.

A reduction in total planned quantities due to the elimination of previously required shore-based training systems, an extension of the development program to include capability improvements, a lower and longer procurement profile, and increases in material costs have resulted in a critical Nunn-McCurdy unit cost breach to the PAUC and APUC in the current JPALS Inc 1A APB. A program deviation report was signed by the program manager on January 28, 2014, and was endorsed by the Navy Acquisition Executive and forwarded to the Milestone Decision Authority on March 12, 2014. The Secretary of the Navy notified Congress of the breach on March 19, 2014.

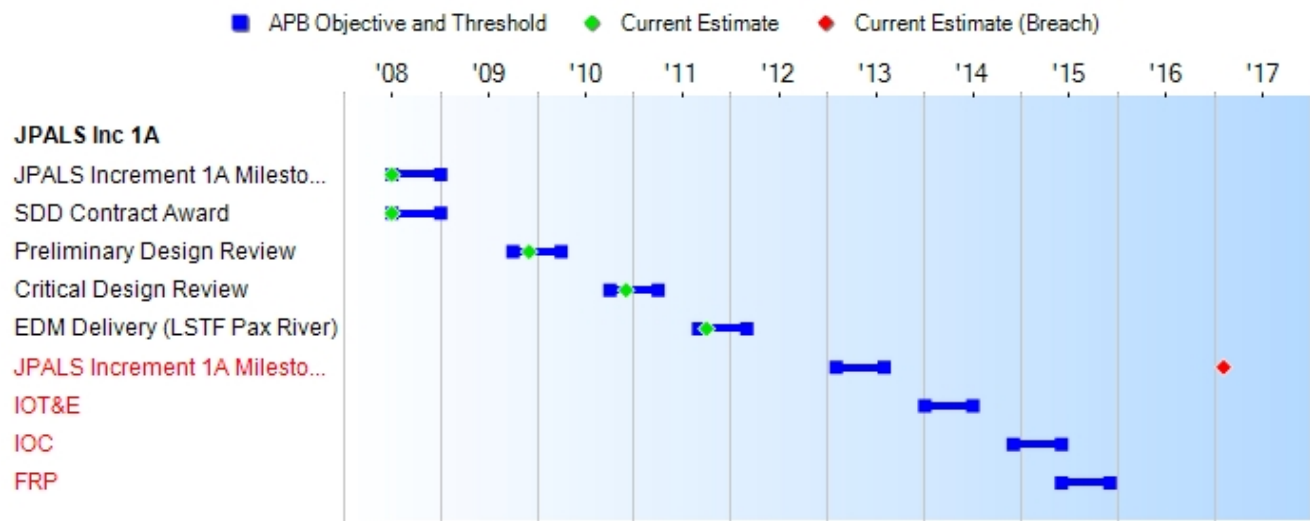
There are no significant software-related issues with this program at this time.

## Threshold Breaches

APB Breaches			Explanation of Breach
<b>Schedule</b>		<input checked="" type="checkbox"/>	The schedule and procurement cost breaches were previously reported in the June 2012 SAR.
<b>Performance</b>		<input type="checkbox"/>	
<b>Cost</b>	RDT&E	<input checked="" type="checkbox"/>	Proposed changes to JPALS Inc 1A extend the development program in order to conduct risk reduction activities for manned and unmanned auto-land capability improvements in support of F-35B/C and UCLASS test and deployment schedules, thereby further delaying the production decision (Milestone C) by approximately three years to FY 2017.
	Procurement	<input checked="" type="checkbox"/>	
	MILCON	<input type="checkbox"/>	
	Acq O&M	<input type="checkbox"/>	
<b>O&amp;S Cost</b>		<input type="checkbox"/>	
<b>Unit Cost</b>	PAUC	<input checked="" type="checkbox"/>	A reduction in total planned quantities due to the elimination of previously required shore-based training systems, an extension of the development program to include capability improvements, a lower and longer procurement profile, and increases in material costs have resulted in a critical Nunn-McCurdy unit cost breach to the PAUC and APUC in the current JPALS Inc 1A APB. A program deviation report was signed by the program manager on January 28, 2014, and was endorsed by the Navy Acquisition Executive and forwarded to the Milestone Decision Authority on March 12, 2014. The Secretary of the Navy notified Congress of the breach on March 19, 2014.
	APUC	<input checked="" type="checkbox"/>	
Nunn-McCurdy Breaches			
<b>Current UCR Baseline</b>			
	PAUC	Critical	
	APUC	Critical	
<b>Original UCR Baseline</b>			
	PAUC	Critical	
	APUC	Critical	



## Schedule



Milestones	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate
JPALS Increment 1A Milestone B	JUL 2008	JUL 2008	JAN 2009	JUL 2008
SDD Contract Award	JUL 2008	JUL 2008	JAN 2009	JUL 2008
Preliminary Design Review	OCT 2009	OCT 2009	APR 2010	DEC 2009
Critical Design Review	OCT 2010	OCT 2010	APR 2011	DEC 2010
EDM Delivery (LSTF Pax River)	SEP 2011	SEP 2011	MAR 2012	OCT 2011
JPALS Increment 1A Milestone C	FEB 2013	FEB 2013	AUG 2013	<b>FEB 2017<sup>1</sup></b> (Ch-1)
IOT&E	JAN 2014	JAN 2014	JUL 2014	<b>TBD<sup>1</sup></b> (Ch-2)
IOC	DEC 2014	DEC 2014	JUN 2015	<b>TBD<sup>1</sup></b> (Ch-2)
FRP	JUN 2015	JUN 2015	DEC 2015	<b>TBD<sup>1</sup></b> (Ch-2)

<sup>1</sup>APB Breach

### Change Explanations

(Ch-1) The current estimate for Milestone C has changed from November 2013 to February 2017 due to an extension of the development program in order to conduct risk reduction activities for manned and unmanned auto-land capability improvements in support of F-35B/C and UCLASS test and deployment schedules.

(Ch-2) The current estimates for IOT&E, IOC, and FRP will be established upon certification of the program following completion of the Nunn-McCurdy process.

**Acronyms and Abbreviations**

EDM - Engineering Development Model

FRP - Full Rate Production

IOT&E - Initial Operational Test and Evaluation

LSTF - Landing Systems Test Facility

Pax - Patuxent

SDD - System Development and Demonstration

UCLASS - Unmanned Carrier-Launched Airborne Surveillance and Strike

## Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Network Ready: The system must support Net-Centric military operations. The system must be able to enter and be managed in the network, and exchange data in a secure manner to enhance mission effectiveness. The system must continuously provide survivable, interoperable, secure, and operationally effective information exchanges to enable a Net-Centric military capability.	The system must fully support execution of operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability,	The system must fully support execution of operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability,	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements	TBD	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements

	integrity, authentication, confidentiality, and nonrepudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	integrity, authentication, confidentiality, and nonrepudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	including availability, integrity, authentication, confidentiality, and nonrepudiation, and issuance of an IATO by the (DAA), and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.		including availability, integrity, authentication, confidentiality, and nonrepudiation, and issuance of an IATO by the (DAA), and 5) Operationally effective information exchanges; mission critical performance and IA attributes; data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.
Guidance Quality	Certification for operations in 0 ft ceiling and 0 NM visibility conditions.	Certification for operations in 0 ft ceiling and 0 NM visibility conditions.	Sufficient quality to allow the Service to certify the sea-based system for use in 200 ft ceiling and ½ NM visibility weather conditions.	TBD	Meeting Threshold with margin. Sufficient quality to allow the Service to certify the sea-based system for use in 200 ft ceiling and ½ NM

					visibility weather conditions.
Manpower	Should reduce current manning levels when currently fielded systems are phased out. Should require no dedicated personnel. Should be reduced to no more than one qualified air traffic controller.	Should reduce current manning levels when currently fielded systems are phased out. Should require no dedicated personnel. Should be reduced to no more than one qualified air traffic controller.	The total number of dedicated maintenance and/or logistics personnel needed to support Sea-Based JPALS per shift shall be no more than one person. The number of qualified final controller positions per shift on CVN/LH ship classes shall be no more than two air traffic controllers.	TBD	Current manning level
Operational Availability (Ao) in Clear Air	JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins should be at least 99.7%.	JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins should be at least 99.7%.	JPALS Ao requirement in clear air for manned aircraft to 200 ft - ½ NM mins shall be at least 99.0%.	TBD	99.1%

**Requirements Source**

Capability Development Document (CDD) dated March 16, 2007

**Change Explanations**

None

**Acronyms and Abbreviations**

ATO - Approval to Operate  
DAA - Designated Approval Authority  
DISR - DOD Information Technology Standards and Profile Registry  
ft - feet  
GIG - Global Information Grid  
IA - Information Assurance  
IATO - Interim Approval to Operate  
IT - Information Technology  
KIP - Key Interface Profile  
mins - minimums  
NCOW RM - Net Centric Operations and Warfare Reference Model  
NM - Nautical Mile  
TV - Technical Standards View

## Track to Budget

### RDT&E

Appn	BA	PE
Navy 1319	04	0603860N
Project	Name	
2329	Joint Precision Approach and Landing System	

### Procurement

Appn	BA	PE
Navy 1810	02	0305014N
Line Item	Name	
2867	Joint Precision Approach and Landing System	
Navy 1810	08	0305014N
Line Item	Name	
9020	Joint Precision Approach and Landing System	

### MILCON

Appn	BA	PE
Navy 1205	01	0805376N
Project	Name	
P977	Facilities Restoration and Modification - RDT&E	

(Sunk)

## Cost and Funding

### Cost Summary

#### Total Acquisition Cost and Quantity

Appropriation	BY2008 \$M			BY2008 \$M	TY \$M		
	SAR Baseline Dev Est	Current APB Development Objective/Threshold	Current Estimate		SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	753.7	753.7	829.1	<b>1113.3</b> <sup>1</sup>	781.4	781.4	1191.2
Procurement	202.9	202.9	223.0	<b>315.9</b> <sup>1</sup>	243.7	243.7	404.5
Flyaway	--	--	--	254.2	--	--	325.7
Recurring	--	--	--	254.2	--	--	325.7
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	61.7	--	--	78.8
Other Support	--	--	--	39.1	--	--	50.0
Initial Spares	--	--	--	22.6	--	--	28.8
MILCON	6.6	6.6	7.3	6.6	6.8	6.8	6.8
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	963.2	963.2	N/A	1435.8	1031.9	1031.9	1602.5

<sup>1</sup> APB Breach

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	12	12	10
Procurement	25	25	17
Total	37	37	27

Unit of Measure: The physical architecture of a JPALS system consists of multiple equipment racks, processing equipment, sensors, radios, and antennas.



## Cost and Funding

### Funding Summary

#### Appropriation and Quantity Summary FY2015 President's Budget / December 2013 SAR (TY\$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	783.2	156.2	54.9	92.5	76.9	24.9	2.6	0.0	1191.2
Procurement	0.0	0.0	0.0	0.0	0.0	65.2	75.7	263.6	404.5
MILCON	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2015 Total	790.0	156.2	54.9	92.5	76.9	90.1	78.3	263.6	1602.5
PB 2014 Total	698.3	42.0	51.4	83.6	75.3	64.4	59.1	28.7	1102.8
Delta	91.7	114.2	3.5	8.9	1.6	25.7	19.2	234.9	499.7

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	10	0	0	0	0	0	0	0	0	10
Production	0	0	0	0	0	0	2	2	13	17
PB 2015 Total	10	0	0	0	0	0	2	2	13	27
PB 2014 Total	10	0	0	2	6	6	7	6	0	37
Delta	0	0	0	-2	-6	-6	-5	-4	13	-10

## Cost and Funding

### Annual Funding By Appropriation

#### Annual Funding TY\$

#### 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2001	--	--	--	--	--	--	7.4
2002	--	--	--	--	--	--	13.2
2003	--	--	--	--	--	--	15.3
2004	--	--	--	--	--	--	17.7
2005	--	--	--	--	--	--	25.9
2006	--	--	--	--	--	--	32.4
2007	--	--	--	--	--	--	36.0
2008	--	--	--	--	--	--	66.7
2009	--	--	--	--	--	--	74.1
2010	--	--	--	--	--	--	135.2
2011	--	--	--	--	--	--	154.2
2012	--	--	--	--	--	--	84.6
2013	--	--	--	--	--	--	120.5
2014	--	--	--	--	--	--	156.2
2015	--	--	--	--	--	--	54.9
2016	--	--	--	--	--	--	92.5
2017	--	--	--	--	--	--	76.9
2018	--	--	--	--	--	--	24.9
2019	--	--	--	--	--	--	2.6
<b>Subtotal</b>	<b>10</b>	--	--	--	--	--	<b>1191.2</b>

**Annual Funding BY\$****1319 | RDT&E | Research, Development, Test, and Evaluation, Navy**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non Recurring Flyaway BY 2008 \$M</b>	<b>Total Flyaway BY 2008 \$M</b>	<b>Total Support BY 2008 \$M</b>	<b>Total Program BY 2008 \$M</b>
2001	--	--	--	--	--	--	8.5
2002	--	--	--	--	--	--	15.0
2003	--	--	--	--	--	--	17.2
2004	--	--	--	--	--	--	19.3
2005	--	--	--	--	--	--	27.6
2006	--	--	--	--	--	--	33.4
2007	--	--	--	--	--	--	36.3
2008	--	--	--	--	--	--	66.0
2009	--	--	--	--	--	--	72.4
2010	--	--	--	--	--	--	130.1
2011	--	--	--	--	--	--	144.9
2012	--	--	--	--	--	--	78.1
2013	--	--	--	--	--	--	109.5
2014	--	--	--	--	--	--	139.6
2015	--	--	--	--	--	--	48.2
2016	--	--	--	--	--	--	79.6
2017	--	--	--	--	--	--	64.9
2018	--	--	--	--	--	--	20.6
2019	--	--	--	--	--	--	2.1
<b>Subtotal</b>	<b>10</b>	--	--	--	--	--	<b>1113.3</b>

**Annual Funding TY\$****1810 | Procurement | Other Procurement, Navy**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway TY \$M</b>	<b>Non End Item Recurring Flyaway TY \$M</b>	<b>Non Recurring Flyaway TY \$M</b>	<b>Total Flyaway TY \$M</b>	<b>Total Support TY \$M</b>	<b>Total Program TY \$M</b>
2018	2	52.1	--	--	52.1	13.1	65.2
2019	2	60.8	--	--	60.8	14.9	75.7
2020	2	38.9	--	--	38.9	6.5	45.4
2021	5	58.4	--	--	58.4	17.7	76.1
2022	3	46.4	--	--	46.4	12.2	58.6
2023	3	51.2	--	--	51.2	12.5	63.7
2024	--	17.9	--	--	17.9	1.9	19.8
<b>Subtotal</b>	<b>17</b>	<b>325.7</b>	<b>--</b>	<b>--</b>	<b>325.7</b>	<b>78.8</b>	<b>404.5</b>

**Annual Funding BY\$****1810 | Procurement | Other Procurement, Navy**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non Recurring Flyaway BY 2008 \$M</b>	<b>Total Flyaway BY 2008 \$M</b>	<b>Total Support BY 2008 \$M</b>	<b>Total Program BY 2008 \$M</b>
2018	2	42.8	--	--	42.8	10.8	53.6
2019	2	49.0	--	--	49.0	12.0	61.0
2020	2	30.7	--	--	30.7	5.2	35.9
2021	5	45.3	--	--	45.3	13.7	59.0
2022	3	35.2	--	--	35.2	9.3	44.5
2023	3	38.1	--	--	38.1	9.3	47.4
2024	--	13.1	--	--	13.1	1.4	14.5
<b>Subtotal</b>	<b>17</b>	<b>254.2</b>	<b>--</b>	<b>--</b>	<b>254.2</b>	<b>61.7</b>	<b>315.9</b>

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**Cost Quantity Information****1810 | Procurement | Other Procurement, Navy**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway (Aligned with Quantity) BY 2008 \$M</b>
2018	2	46.7
2019	2	52.8
2020	2	28.0
2021	5	51.3
2022	3	31.0
2023	3	44.4
2024	--	--
<b>Subtotal</b>	<b>17</b>	<b>254.2</b>

**Annual Funding TY\$**  
**1205 | MILCON | Military Construction,**  
**Navy and Marine Corps**

<b>Fiscal Year</b>	<b>Total Program TY \$M</b>
2008	6.8
<b>Subtotal</b>	<b>6.8</b>

**Annual Funding BY\$**  
**1205 | MILCON | Military Construction,**  
**Navy and Marine Corps**

<b>Fiscal Year</b>	<b>Total Program BY 2008 \$M</b>
2008	6.6
<b>Subtotal</b>	<b>6.6</b>



## Low Rate Initial Production

There are currently no LRIP quantities for the JPALS Inc 1A program.

## Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Memo
United Kingdom	6/1/2012	1	3.9	This is a technical services case.

There is a technical services case with the United Kingdom (UK) which allows for the exchange of technical information and services for both the AN/SPN-41 instrument carrier landing system and the JPALS ship system. There are no Technology Security/Foreign Disclosure issues related to the technical services case with the UK.

## Nuclear Costs

None

## Unit Cost

### Unit Cost Report

	BY2008 \$M	BY2008 \$M	
Unit Cost	Current UCR Baseline (DEC 2008 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

#### Program Acquisition Unit Cost (PAUC)

Cost	963.2	1435.8	
Quantity	37	27	
Unit Cost	26.032	53.178	<b>+104.28</b> <sup>1</sup>

#### Average Procurement Unit Cost (APUC)

Cost	202.9	315.9	
Quantity	25	17	
Unit Cost	8.116	18.582	<b>+128.96</b> <sup>1</sup>

	BY2008 \$M	BY2008 \$M	
Unit Cost	Original UCR Baseline (DEC 2008 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

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	TY \$M		
Unit Cost	Current UCR Baseline (DEC 2008 APB)	Current Estimate (DEC 2013 SAR)	TY % Change

#### Program Acquisition Unit Cost (PAUC)

Cost	1031.9	1602.5	
Unit Cost	27.889	59.352	+112.82

#### Average Procurement Unit Cost (APUC)

Cost	243.7	404.5	
Unit Cost	9.748	23.794	+144.09

Unit Cost	TY \$M		
	Original UCR Baseline (DEC 2008 APB)	Current Estimate (DEC 2013 SAR)	TY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	1031.9	1602.5	
Unit Cost	27.889	59.352	+112.82
Average Procurement Unit Cost (APUC)			
Cost	243.7	404.5	
Unit Cost	9.748	23.794	+144.09

### <sup>1</sup> Nunn-McCurdy Breach

#### Unit Cost Breach Data

Changes from Previous SAR	\$M/Qty.	Percent
PAUC (BY \$M)	25.689	+93.45
APUC (BY \$M)	9.949	+115.24
PAUC Quantity	-10	0.00
PAUC (TY \$M)	29.547	+99.13
APUC (TY \$M)	13.331	+127.41

Initial SAR Information	BY \$M	TY \$M
Program Acquisition Cost	963.2	1031.9

#### Unit Cost PAUC Changes

PAUC increased due to a reduction in total planned quantities, an extension of the development program to include capability improvements, and increases in material costs.

#### Unit Cost APUC Changes

APUC increased due to increases in material costs, a lower and longer procurement profile, and a reduction in total planned quantities.

#### Impact of Performance or Schedule Changes

An extension of the development program to include capability improvements has resulted in a delay in production. The production schedule is closely tied to CVN and LH type ship availability schedules. Lower production quantities spread over a longer number of years than previously planned has increased cost.

#### Program Management or Control

Pending the outcome of the Nunn-McCurdy process, the Navy will work closely with OSD to manage and control cost growth.

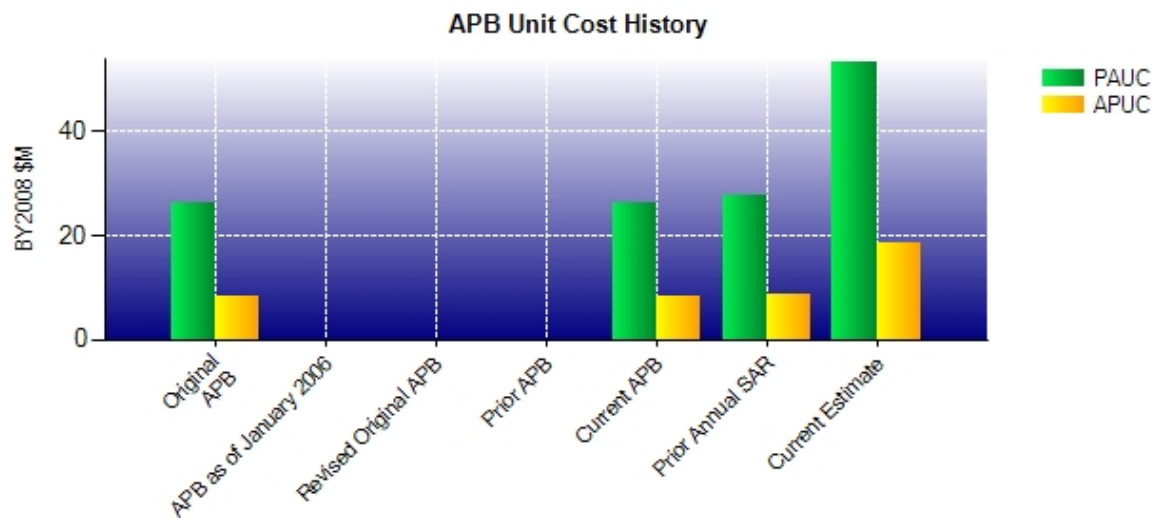
#### Cost Control Actions

Pending the outcome of the Nunn-McCurdy process, the Navy will work closely with OSD to manage and control cost growth.

**Nunn-McCurdy Comments**

A reduction in total planned quantities due to the elimination of previously required shore-based training systems, an extension of the development program to include capability improvements, a lower and longer procurement profile, and increases in material costs have resulted in a critical Nunn-McCurdy unit cost breach to the PAUC and APUC in the current JPALS Inc 1A APB.

## Unit Cost History



	Date	BY2008 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	DEC 2008	26.032	8.116	27.889	9.748
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	DEC 2008	26.032	8.116	27.889	9.748
Prior Annual SAR	DEC 2012	27.489	8.633	29.805	10.463
Current Estimate	DEC 2013	53.178	18.582	59.352	23.794

## SAR Unit Cost History

### Current SAR Baseline to Current Estimate (TY \$M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.889	-0.107	7.878	9.885	8.148	4.881	0.000	0.778	31.463	59.352

**Current SAR Baseline to Current Estimate (TY \$M)**

<b>Initial APUC Dev Est</b>	<b>Changes</b>								<b>APUC Current Est</b>
	<b>Econ</b>	<b>Qty</b>	<b>Sch</b>	<b>Eng</b>	<b>Est</b>	<b>Oth</b>	<b>Spt</b>	<b>Total</b>	
9.748	-0.394	1.016	1.418	0.000	10.771	0.000	1.235	14.046	23.794

**SAR Baseline History**

<b>Item/Event</b>	<b>SAR Planning Estimate (PE)</b>	<b>SAR Development Estimate (DE)</b>	<b>SAR Production Estimate (PdE)</b>	<b>Current Estimate</b>
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	JUL 2008	N/A	JUL 2008
Milestone C	N/A	FEB 2013	N/A	FEB 2017
IOC	N/A	DEC 2014	N/A	TBD
Total Cost (TY \$M)	N/A	1031.9	N/A	1602.5
Total Quantity	N/A	37	N/A	27
Prog. Acq. Unit Cost (PAUC)	N/A	27.889	N/A	59.352

**Cost Variance**

<b>Summary Then Year \$M</b>				
	<b>RDT&amp;E</b>	<b>Proc</b>	<b>MILCON</b>	<b>Total</b>
SAR Baseline (Dev Est)	781.4	243.7	6.8	1031.9
Previous Changes				
Economic	+5.9	-4.4	--	+1.5
Quantity	-5.5	+14.5	--	+9.0
Schedule	--	+14.7	--	+14.7
Engineering	+84.5	--	--	+84.5
Estimating	-52.8	-26.3	--	-79.1
Other	--	--	--	--
Support	--	+40.3	--	+40.3
Subtotal	+32.1	+38.8	--	+70.9
Current Changes				
Economic	-2.1	-2.3	--	-4.4
Quantity	--	-75.2	--	-75.2
Schedule	+242.8	+9.4	--	+252.2
Engineering	+135.5	--	--	+135.5
Estimating	+1.5	+209.4	--	+210.9
Other	--	--	--	--
Support	--	-19.3	--	-19.3
Subtotal	+377.7	+122.0	--	+499.7
Total Changes	+409.8	+160.8	--	+570.6
CE - Cost Variance	1191.2	404.5	6.8	1602.5
CE - Cost & Funding	1191.2	404.5	6.8	1602.5



Summary Base Year 2008 \$M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	753.7	202.9	6.6	963.2
Previous Changes				
Economic	--	--	--	--
Quantity	-5.1	+12.0	--	+6.9
Schedule	--	+7.8	--	+7.8
Engineering	+71.6	--	--	+71.6
Estimating	-42.8	-23.4	--	-66.2
Other	--	--	--	--
Support	--	+33.8	--	+33.8
Subtotal	+23.7	+30.2	--	+53.9
Current Changes				
Economic	--	--	--	--
Quantity	--	-61.1	--	-61.1
Schedule	+214.5	--	--	+214.5
Engineering	+120.0	--	--	+120.0
Estimating	+1.4	+165.0	--	+166.4
Other	--	--	--	--
Support	--	-21.1	--	-21.1
Subtotal	+335.9	+82.8	--	+418.7
Total Changes	+359.6	+113.0	--	+472.6
CE - Cost Variance	1113.3	315.9	6.6	1435.8
CE - Cost & Funding	1113.3	315.9	6.6	1435.8

Previous Estimate: December 2012

<b>RDT&amp;E</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-2.1
Adjustment for current and prior escalation. (Estimating)	+1.4	+1.5
Extension of development effort due to delay in production decision from FY 2013 to FY 2017. (Schedule)	+214.5	+242.8
Change in program scope to add manned and unmanned auto-land capabilities. (Engineering)	+120.0	+135.5
<b>RDT&amp;E Subtotal</b>	<b>+335.9</b>	<b>+377.7</b>

<b>Procurement</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-2.3
Quantity variance resulting from a reduction of 10 shore-based training systems from 27 to 17. (Quantity)	-61.1	-75.2
Stretch-out of procurement buy profile from FY 2014 to FY 2018 due to addition of manned and unmanned auto-land capabilities. (Schedule)	0.0	+9.4
Revised estimate due to merging of multiple staff teams into a single team, which led to increases in government in-house systems engineering and program management. (Estimating)	+156.0	+198.0
Revised estimate of hardware costs due to acceleration of capability upgrades, changes in estimating assumptions, and software changes for addition of unmanned capability. (Estimating)	+9.0	+11.4
Decrease in Other Support due to addition of onboard replenishment spares not previously included. (Support)	-9.8	-8.3
Decrease in Initial Spares due to quantity reduction. (Support) (QR)	-11.3	-11.0
<b>Procurement Subtotal</b>	<b>+82.8</b>	<b>+122.0</b>

(QR) Quantity Related

## Contracts

### Appropriation: RDT&E

Contract Name	<b>JPALS Development Contract</b>
Contractor	Raytheon Company
Contractor Location	1801 Hughes Drive Fullerton, CA 92833-2200
Contract Number, Type	N00019-08-C-0034, CPAF/CPIF
Award Date	September 15, 2008
Definitization Date	September 15, 2008

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
232.8	N/A	12	368.0	N/A	10	291.7	292.3

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to Engineering and Manufacturing Development (EMD) contract completion and the Phase I 19-month JPALS Inc 1A EMD contract extension being awarded for risk reduction activities in support of manned and unmanned auto-land capability improvements.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/22/2013)	-21.0	-1.0
Previous Cumulative Variances	-23.4	-1.4
Net Change	+2.4	+0.4
Percent Variance	-8.19%	-0.39%
Percent Complete	+97.68%	

### Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to a decrease in labor hours (especially related to level of effort) across several Work Breakdown Structure elements. Other areas attributing to the favorable variance include experienced personnel and leveraging lessons learned from prior ship trips during system test.

The favorable net change in the schedule variance is due to prior delinquent activities that have been worked and/or completed as well as the contract nearing completion. As the contract nears completion, the schedule variance will naturally trend towards \$0, as all the work scheduled to complete will be completed. As of November 2013, the Integrated Master Schedule (IMS) was 98% complete, with approximately 100 discrete tasks still remaining.

### General Contract Variance Explanation

The Naval Air Systems Command granted Raytheon a waiver of delivery for the Earned Value Management (EVM) Contract Data Requirements Lists A106 and A109 (Contract Performance Report and IMS). In doing so, the last EVM deliverable was the submission reporting the November 2013 month end data. At that point, the contract was approximately 98% performed and 106% spent, resulting in a Cost Performance Index of 0.92 and Schedule Performance Index of 1.00 with approximately \$6.1M of remaining work.

**Contract Comments**

This contract is more than 90% complete; therefore, this is the final report for this contract.

## Deliveries and Expenditures

Delivered to Date	Plan to Date	Actual to Date	Total Quantity	Percent Delivered
Development	8	8	10	80.00%
Production	0	0	17	0.00%
Total Program Quantity Delivered	8	8	27	29.63%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	1602.5	Years Appropriated	14
Expended to Date	607.1	Percent Years Appropriated	58.33%
Percent Expended	37.88%	Appropriated to Date	946.2
Total Funding Years	24	Percent Appropriated	59.05%

The above data is current as of 2/26/2014.

## Operating and Support Cost

### JPALS Inc 1A

#### Assumptions and Ground Rules

##### Cost Estimate Reference:

This section has not been updated from the previous SAR. The O&S cost estimate will be updated as part of the Nunn-McCurdy certification process and will be revised to reflect significant program quantity, schedule, and scope changes.

The Office of the Secretary of Defense Cost Assessment and Program Evaluation organization conducted an estimate in support of the Milestone B decision on July 14, 2008. Since then the Base Year values have decreased and time phasing has been adjusted resulting in lower Then Year values. Updated reliability projections resulted in a reduction from the 2008 estimate including the addition of a 3% Cost Growth Above Inflation factor to the Depot Level Repairables. In-Service Engineering Activity (ISEA) has been added as part of the Supply Chain Management under Sustaining Support due to its current cost benefit to legacy landing systems. Hardware modifications and software maintenance have been refined resulting in a reduction from the 2008 estimate. The hardware modifications and software maintenance have been removed from the Sustaining Support section in the initial estimate and placed in the Continuing System Improvements section in the new estimate. The estimate was updated in December 2011 based on the revised JPALS Cost Analysis Requirements Description.

##### Sustainment Strategy:

This section has not been updated from the previous SAR. The O&S cost estimate will be updated as part of the Nunn-McCurdy certification process and will be revised to reflect significant program quantity, schedule, and scope changes.

The sustainment strategy is still being analyzed, which includes using Performance Based Logistics. There will be a total of 29 retrofit ship and sea-based ashore units; this is not including the O&S costs for the seven Shipbuilding and Conversion (SCN) funded ships. Each SCN funded ship accounts for its own O&S cost. The system is planned to have a 20-year life after introduction to the fleet with an operational tempo of 4,000 hours per year per ship and 3,500 hours per year per sea-based-ashore.

##### Antecedent Information:

This section has not been updated from the previous SAR. The O&S cost estimate will be updated as part of the Nunn-McCurdy certification process and will be revised to reflect significant program quantity, schedule, and scope changes.

The antecedent system associated with this estimate is the AN/SPN-46(V)3. Legacy systems continue to experience service life adjustments and system modifications that make Total O&S Costs compilation in a static service life (e.g., 25 years) to be not credible. In addition, the capture of O&S data in available reporting systems has changed significantly over time. The Visibility and Management of Operating and Support Costs database, the Navy's official system for collecting and reporting O&S costs, provides costs from 1997-present. The cost data for platforms in existence prior to 1997 is either unavailable or incomplete. Sufficient historical data and resources do not exist to create comparable, credible Total O&S Costs.

Unitized O&S Costs BY2008 \$K			
Cost Element	JPALS Inc 1A Average Annual Cost Per System	AN/SPN-46(V)3 (Antecedent) Average Annual Cost Per System	
Unit-Level Manpower	0.005		0.716
Unit Operations	0.000		0.000
Maintenance	0.310		0.051
Sustaining Support	0.210		0.027
Continuing System Improvements	0.100		0.408
Indirect Support	0.000		0.000
Other	0.000		0.000
Total	0.625		1.202

Unitized Cost Comments:

This section has not been updated from the previous SAR. The O&S cost estimate will be updated as part of the Nunn-McCurdy process and will be revised to reflect significant program quantity, schedule, and scope changes.

The unitized costs are based on 29 retrofit ship and sea-based-ashore units with a 20-year life.  $\$362.5 = \$0.625 \times 29 \text{ units} \times 20 \text{ year life cycle}$ . The small delta between this calculated value and the total O&S cost shown is due to rounding. The unitized costs do not include the O&S for seven SCN funded ships.

	Total O&S Cost \$M			
	Current Development APB Objective/Threshold		Current Estimate	
	JPALS Inc 1A		JPALS Inc 1A	AN/SPN-46(V)3 (Antecedent)
Base Year	338.6	372.5	362.6	N/A
Then Year	520.6	N/A	480.3	N/A

Total O&S Costs Comments:

None

**Disposal Costs:**

Disposal costs have not been identified at this time.